

NEWSLETTER OF THE  
NORTHERN CALIFORNIA CONTEST CLUB  
44 TOYON TERRACE  
DANVILLE, CA 94526  
April 1987

NO. 178

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PRESIDENT: WR6R, AL	AWARDS: K6ZM, PHIL
VP/CC: W7MAP, CHUCK	EDITOR: WR6R, AL
SEC/TREAS: NV6Z, RON	DIRECTORS: WA6VEF, GARY,
MEMBERSHIP: W6REC, DUANE	W6REC, DUANE, KA6ING, LOUESE
	PHIL, K6ZM

NCCC REPEATER, W6RGG, 147.24 Mhz - NET EVERY WED 8 : 00 PM

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## **AWARDS BANQUET APRIL 18**

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### **COMING EVENTS**

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APRIL 4 NORTH AMERICA QSO PARTY-CW  
APRIL 11 NORTH AMERICA QSO PARTY-PHONE  
APRIL 18 NCCC AWARDS AND ELECTIONS MEETING  
MAY 30-31 CQWPX CW CONTEST

### **FROM THE PREZ DE WR6R**

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WPX has just finished with a lot of club members making noise. Thanks to all the mult-single stations that opened the door to all those that needed a place to operate and contribute to the club. The CW weekend will not fall on Memorial Day (May 25), so make your plans to finish off the contest season in a big way! Please send a copy of your summary sheet to K6ZM.

This my last article as Prez- Best of Luck to the new President and I hope the members help and pitch in to keep the NCCC the best Contest Club in the World!

# **NCCC AWARD BANQUET**

**April 18, 1987**

**Pleasanton Hotel, 855 Main Street, Pleasanton**

**5:30-6:30 Cocktails**

**6:30 - Dinner**

**Entrees : London Broil, Cabernet Sauvignon Sauce ; Breast of Chicken with Mushrooms and Champagne Sauce - \$ 17.00**

**The Pleasanton Hotel, built in 1851, is the site of the 1987 Awards and Election of Officers Banquet. Although the \$17.00 cost may seem high, the food and setting is first class.**

**Please R.S.V.P. with KA6ING by April 12, 1987.**

**Elections will be held at the meeting and the following candidates have thrown in their hats in the ring for office:**

**President: WZ6Z, Howard**

**Sec/Tres. : VE2AQS, Bob**

**Board of Directors: 1. K6ZM, Phil, 2. NV6Z, Ron, 3. KA6ING, Louese 4. W6REC, Duane.**

**The office of Vice-President is still open!**

**As with all the meetings in Hayward, or elsewhere, if you must smoke, please do it outside the meeting area as the NCCC has a no smoking rule for all meetings.**

**Plaques for the 1986 CQWW will be given to the following at the banquet:**

**Single op. Phone Domestic: W6GO**

**Single op. Phone DX: WR6R/KH6**

**Single op. CW Domestic: N6RO ( WA6VEF) Mult-Mult PhoneDX: PJ4B (K3EST)**

**Mult-S CW Domestic: AI6V**

**Mult-S Phone DX: AI6V/KH6**

**Mult-S Phone Domestic: NB6L**

**Mult-Mult Domestic PH: N6RO**

**Mult-S CW DX: VP5X (K6ANP)**



Framed Certificates for the 1986 CQWW will be given to the following single operators:

WX6M, Rich, 743 QSO'S  
N6EK, Bob, 715 QSO'S  
N6GG, Rich, 714 QSO'S  
W6BSY, Mac, 619 QSO'S  
WE6G, Mike, 593 QSO'S  
K16CG, George, 531 QSO'S  
K6KLY, Russ, 525 QSO'S

Framed certificates will be given to the ops.  
NB6L (M/S PHONE):

AK6T, PAT ; K4UYT, Bob, ; K6ZM, Phil ; K16EZ, Alex.  
W6SZN, Kip- AI6V (M/S) CW  
K6GSS, John- AI6V/KH6 (M/S) Phone  
KK6X , Jim ; WW6F, Lyle- VP5X (M/S) CW

Certificates will be given out to the N6RO winning M/M Domestic:

N6BV, Dean  
N6KT, Rich  
NU6S, Tim  
NV6Z, Ron  
W6XX, Pete  
WA6YEF, Gary  
K6TMB, Lou

#### **FOUNDER'S TROPHY**

Awarded to the NCCC member achieving the highest score in both Phone and CW contests on all bands, operating inside the NCCC territory. A call letter and score plate is added each year and the trophy is held by the winner for that year.

The 1986 winner (also the winner in 1985) is W6FSJ, Wendell.

The 1982 winner was N6BV, Dean with 3, 597, 524

The 1983 winner was N6QR, Adam with, 2, 623, 051

The 1984 Winner was WC6I, Steve with 482,685

These past winner's will have their scores engraved to the trophy along with the 1986 winner.

SOME ANTENNA QUESTIONS  
-or-  
WHY DON'T MY ANTENNAS WORK? de N6BT

1. A low VSWR across the band means the antenna is working well. (Yes/No)

No - all it means is that the VSWR is low across the band. If the VSWR is extremely flat, it probably means the system has large losses in the antenna (traps, etc.) or in the feed line. The best example is a dummy load - it is flat across the entire band, but does not radiate very well! Using more than one driven element (properly done) will tend to make a flatter VSWR across the band (i.e. a log periodic).

2. A high VSWR means that the antenna is not working well at all. (Yes/No)

No - all it means is that the antenna is not properly matched to the feed line. If the antenna is operated in this condition, provided that the exciter/amplifier can drive the line, there will be losses in the feedline. These losses might not even be too great, depending on the feed line type (open-wire is the best).

3. A delta loop can be very low to the ground ("squished" fairly flat) and still work very well. (Yes/No)

No - as the delta loop becomes more squished together, it acts more and more like a transmission line. The ultimate would be a parallel transmission line, which would be basically a dead short to the desired RF energy. The most efficient is when all three sides are equal length and the angles are all 60 degrees; however, this is not the easiest to match.

4. A single driven element in a Yagi-type antenna is as good as a dual-driven system. (Yes/No)

Yes - depending upon the meaning of the term "good". The purpose of the driver is to excite the antenna. The single driver does this just fine. The only difference is that the dual-driven (multiple-driven) can maintain a flatter VSWR across the band. This is usually not a problem, however, because the VSWR with a single driver can be tuned for a VSWR of under 2:1 across most bands.

5. The radiation pattern from a Yagi-type antenna is the same for a single driver as for a dual (multiple) driver system? (Yes/No)

No - the single driver will have deeper side nulls, whereas a dual-driven will have "ears" off the sides (towards the back of the pattern).

6. The length of the driven element in a Yagi-type antenna is critical for antenna performance (gain and front/back ratio). (Yes/No)

No - the only real purpose of the driver is to put power into the array. The length (within reason) is only important to the type of matching system used.

7. Driven or parasitic arrays that are close-spaced are easy to match and tune. (Yes/No)

No - definitely not! The mutual interactions between the elements are tremendous. Moving the spacing from  $1/8$  wave to  $1/4$  wave makes the antenna easier to tune and match, because the "mutuals" are much less significant.



8. A vertical antenna works best on a hill. (Yes/No)

No - it works worst on a hill. It works best on a beach, over-looking the ocean. It also works better on flat terrain, even if there is not water around. If one is situated on a hill, use non-vertical type antennas.

9. The gain of a Yagi-type antenna primarily depends on the number of elements. (Yes/No)

No - it depends on boom length. The number of elements is almost not related to gain at all, provided that the spacing between the elements does not exceed (about)  $1/4$  wavelength. Using a boom of  $3/4$  wave length (52.5 feet on 20 meters), a six-element Yagi and a four-element Yagi on the same boom will have gain that is within 0.1db of each other. Additional directors can either help or hinder the F/B ratio.

10. When calculating antenna heights above ground, boom lengths and element spacings, the formula for the length of a half wave is  $468/f$  (in MHZ). (Yes/No)

No - this is for a half-wave antenna using material with a fairly typical velocity factor. The correct formula is  $492/f$  (in MHZ) for a half wave (in free space).

11. Having an 80 meter dipole 10 feet from other antennas will ensure minimum interaction. (Yes/No)

No - since a wavelength on 80 meters is about 270 feet and since antennas can couple effectively out to a  $1/4$  wavelength (67 feet), 10 feet is not much. The best rule of thumb is to make a VSWR plot before any other antennas are raised and then compare it after the additional antenna is up. If the VSWR plot has changed very much, there is a coupling problem. If possible, each antenna should be plotted in place by itself, then after each one lower in frequency is erected.

12. In free space and using the latest antenna analysis programs, how much forward gain does the well designed Hy-Gain 204BA (4 el, 26' boom) antenna have? (in db)

It has 8.35 - 8.52 dbi. Referenced to a dipole, it has 6.19 - 6.36 db

13. How much more forward gain does a well-designed 6 element Yagi of twice the boom length have over a 3 or 4 element Yagi? (in db)

Using the optimized W2PV design, the long-boom (52') 6 element Yagi has 2.12 - 2.34 db more forward gain. The half-power beam width is 52 degrees for the 6 element and 62 degrees for the shorter antenna (reference the 204BA).

14. Why, then, does the bigger antenna seem to work so much better than 2 db? (essay answer)

In general terms, the 2db difference represents more than meets the eye at first glance. Perhaps the most important difference is lobe compression.

15. If I can't put up one of those huge antennas, can I still be competitive and have fun in pile-ups and contests? (Yes/No)

Yes - just don't expect to always be first in the pile-ups or final scores. There will be times when you will walk right through a big antenna; consequently, sharpen up your operating skills and have it happen more often! The more difficult station to beat is the one with antenna diversity and flexibility.









# RESULTS

## 1986 CALIFORNIA

### QSO PARTY

There can be no doubt about it. Despite so-so conditions on twenty meters and little or no propagation on 15 and 10, the 1986 California QSO Party (CQP) was by far the biggest and best ever. Bolstered by an expanded awards program and a massive pre-contest publicity campaign, a record-breaking 298 logs were received from 51 California counties, 46 states, 6 Canadian sections, and 11 DXCC countries.

Activity was tremendous, as no less than 39 entrants established new single operator scoring records during the weekend--13 of them in California and 26 out of state. CW activity in '86 improved dramatically over CQP weekends of past years. Many W6s were able to maintain good QSO rates on code for more than an hour at a time, and a few participants said that the 20 and 40 meter CW subbands sounded at times like a running of the North American Sprint! In fact, 51 operators sent in logs containing only CW QSOs.

The phone bands were crowded too. California stations formed a 75 KC wide wall of RF on 20 meters during both days of the contest, while serious out-of-state competitors found holes in the wall to call CQ into California hoping to attract W6s who were not actively participating in the test.

Many of the operators who sent in logs for this '86 event came to the conclusion that the CQP is no ordinary state QSO party--for most it is plain and simply FUN. Indeed the Party provides out-of-state ops with an opportunity to work a plethora of W6s and pick off lots of rare California counties. And, for stations in the Golden State, the CQP is different from most contests in that one doesn't need monster antennas to make a lot of QSOs. As Dave, AA6RX, so aptly put it, "In this contest, anyone in California with an amp is a 'big gun.'"

#### California Competition

Leading the pack of California single-ops this year was Mark Beckwith, WA6OTU, who operated station W6AQ to a 266K first place finish and a new Los Angeles County record. Mark started Sunday morning of the CQP 75 QSOs behind the leaders, fell to 140 Qs behind by mid morning, and then managed to catch up with some fantastic 20 meter SSB rates during the final few hours of the test. Primarily a CW enthusiast, one might

suspect that Mark now thinks that Phone contests are FB!

Second place in the '86 CQP goes to Dean Straw, N6BV, who compiled a fine 262K score while fighting line noise the entire weekend. And, finishing third was Gary Caldwell, WA6VEF, guest operating from a portable "Field Day style" station set up by Tom Schiller, N6BT, in Kings County. This effort, featuring monobanders on 10 through 40 meters, established a new single-op county expedition record of 258K.

In spite of the unremarkable band conditions, eight of the Top Ten CA single ops (W6AQ, N6BV, N6BT, N16W, A16V, W6REC, N6QR, and NV6Z) set new county scoring records. As well, the average Top Ten CA score rose from 164K in 1985 to 223K in 1986, which is the highest average in CQP history. Congratulations to Ron, NV6Z, who cracked the CA Top Ten for the first time. And, out to prove that the Cal QSO Party is not just a Phone contest, N6QR finished ninth with 1,001 QSOs, ALL of them on CW! A special mention should also be made of W6JTI and W6UQF who both made the Top Twenty in-state while running barefoot radios. Other CA single-ops who scored new records were W6DPD, K6AAW, K6LRN, W6HAL, and N1EE/6.

#### Out-of-State Competition

Competition outside of California was the toughest ever in a CQP. The number one spot in the 1986 Party goes again to Larry "Tree" Tyree, N6TR/7, who set, for the second consecutive year, a new out-of-state scoring record with an incredible 130,500 points. Tree not only became the first person ever to break the 1,000 QSO barrier from outside of the Golden State, he also managed to contact all 58 California counties, a feat not accomplished since K7GM did it back in 1975.

Finishing in second place was Dave Pascoe, KN3T, with a very impressive 80 kilopoints. Although Dave's numbers are 50K down from those of N6TR, his effort represents the biggest CQP score ever made from the eastern seaboard. Dave worked 57 California multipliers, missing just Tuolumne County. Tuolumne, as it turned out, proved to be the most elusive county in the contest. Of the 18 out-of-state stations who worked at least 50 multipliers, 11 of them missed Tuolumne. Other tough ones--9 of 18 missed Trinity and Plumas; 8 failed to find Mariposa; 6 missed

Monterrey; 5 didn't work Sutter; and 4 were eluded by Inyo, Lake, and Siskiyou.

Landing in third with 64K and 56 CA counties was John Barber, N5JB. These top three outside CA, along with other Top Ten finishers KS3F, AA4NC, VE7SK (who did it with dipoles and a vertical), and K4LTA, all set new single-op scoring records. Other new records were established by WL7K, AC0S, WX4G, K6GSS/KH6, N18L, N81B, WA1PWL, N8ET, KALGOW, W6OKX/4, KD0EE, WB7TJI, W3YY, K7MM, VE2EDK, VE6BNX, VE8CH, LA8PF, and YV5BPG.

It took 53K (a QSO total of about 400, depending on the multiplier and the mix of CW and SSB QSOs) just to make the Top Ten this time around. In fact, AC0S's 23K effort, a score ranked number twenty six in the 1986 CQP, would have been third in the 1985 contest! The state of Texas led the pack with eleven entries; however, the most competitive state was Colorado, where five stations (AC0S, KJ0G, N0FFZ, W2FV, and KR0U) all broke the existing single-op record.

A special thank you is in order to Stewart, VE8CH, who made "many points" passing out that rare NWT/Yukon multiplier to deserving W6s. Twenty-one California stations worked all 58 multipliers, and VE8/VY1 was not the problem it usually is.

#### Multi-operator Competition

Multi-op activity in the 1986 CQP was somewhat scarce, surprisingly so with the addition of two new multi-op trophies for the '86 contest. Grabbing the top spot in the multi-single category was Rich Cutler, WC6H, who, along with lots of help from W7MAP and WC6I, coasted to a 209K victory from San Joaquin County. The multi-single runner-up was the River City Contest Club out of Sacramento, CA, who put Colusa County on the air using the callsign KF6A. Their score is tops among the multi-operator California county expedition entries.

Of the multi-multi participants, first place goes to the two-man team of Bob, N6ZB, and Jim, K56H, for their 136K portable operation from Merced County.

#### California County Expeditions

Again this year we owe a very special debt of gratitude to those intrepid individuals who, as participant W3HON put it, "pack the transceiver in the car and journey off to give all of us a rare multiplier." A big "Thank You!!" is in order to

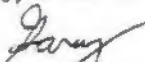


this nice long list of California county expeditioners: K5AAW in Lassen, W6BSY/M in Alpine (the highest scoring mobile entry in the contest), N1EE/6 in Sierra, and WA6ZBX in Mono, all battling cold and snowy weather conditions . . . K6TMB in a cozy cabin in snowy Placer . . . N6ESV in Glenn, Yuba, Sutter, and Placer . . . W6TVP/M in Alpine and Sierra . . . W6WF and K6ANP in Yuba testing rigs and antennas in preparation for their VPSX CQWW CW effort . . . N6LL on a camping trip in Kern . . . KF6A, K6SG, KV6H, N6IG, N6GJC, and N86G in Colusa . . . the K6YA multi-op team camping out on Mt. Tamalpais in Marin County . . . N6BIS in Madera . . . K16EZ in Sacramento . . . K6XO/mobile in 10 counties, among them some of the rarest in the contest . . . NV6Z in San Benito . . . and WA6VEF and N6BT in Kings.

**The Team Behind the Scenes**  
The success of the 1986 California QSO Party was no accident--it was the culmination of the efforts of a hard working team. The Northern California Contest Club would like to acknowledge these amateurs for their help with the '86 CQP: WA6AUE, WC6I, NU6S, K6SG, WE6G, K6MBV, WW6D, and W6REC who all served to co-ordinate MCCC and Northern California CQP activity; NE6I and N6ADI who co-ordinated CQP activities in the Southern California Contest Club; W6CP, KA6ING, K16EZ, and K6GSS for helping with publicity; N6EK for printing up the CQP certificates; W7MAP for helping with photocopying, collating, and awards; W6SZN for maintaining the CQP all-time records list; K52D of the National Contest Journal who graciously provided a set of NCJ mailing labels for the pre-contest publicity campaign; N61IU and WA5VUL of the Foothills Amateur Radio Society for their long hours of help with the CQP T-Shirts; N6AUV for his promotional ideas and financial wizardry; and especially Jim Wade, W6SHS, for his generous support of the 1986 CQP.

Be sure to mark your calendar for

October 3rd and 4th, 1987, as the '87 California QSO Party returns to its traditional slot, the first full weekend in October. See you then!

73,  
  
Gary Caldwell WA6VEF  
1986 CQP Chairman

**Soapbox**  
**Out-of-State.....**  
Did much better than last year, put up beam at 70'. Where, oh where, was San Francisco of all places? (WL7K) . . . This is the best activity I've heard for the Party since I first tried it five years ago. Good job! (KR0U) . . . Worked W6JTI in Humboldt for my last CALIF county! (K18V) . . . Good contest, I'll go full boat next year! (WX4G) . . . Mni tnx for another GREAT test! I think the Cal regulars are some of the most courteous ops on the air--that is one of the reasons this is such an FB Party. CU in '87 (WA9MRU) . . . Super party! But we needed more mobiles to put the "rare" ones on the air. (N0FMR) . . . On weekends I work on an ambulance. Saturday we had four runs. Kinda cut into my score. (K00YP) . . . Score could have been much better, but too much Red Sox pennant fever the same weekend! (W1APU) . . . Had a ball in the contest. Never expected to work so many CA stations in 20 1/2 hours! (KM3T) . . . After the 15M opening on Sat., I went out and threw together a 3 el 15M beam. Naturally, there was no opening there on Sunday. (N81B) . . . I especially appreciated WC6H & how personable & appreciative he was of each QSO he had. (W8JRK) . . . Conditions were really sad. This is the worst score for me (in the CQP) since 1980. Still had a good time.

(WB5ROI) . . . The W6 wine award was what convinced the XYL that I should put in an effort in the contest! (N8ET) . . . Well, here is the log, proof of my insanity!! This was by far the best QSO Party I've seen. Lots of activity! (N6TR/7) . . . I went to bed about 0630Z and got up and back on the air about 1030Z to operate a couple of hours before going to church. I couldn't find a single California station on the bands, so now I know when you guys take your rest stop! (K4LTA) . . . This is one of the finest contests around and, certainly, the best state QSO Party. (WB7TJ1) . . . Here don't operate when U of W or the Seahawks are on TV, which can be very hazardous to one's health. (K7YE) . . . Worked five new counties; only one left, Mariposa. (VE1DH) . . . I make contests very often, and I prefer this one. (VE2EDK).....

**And from California.....**  
It was a lot of fun even if the condx were bad. (W6NAT) . . . Drove the 250+ miles (to get to Lassen Co.) mostly on snow and ice. The entire set up (station and all antennas) were put up Friday afternoon and night in the wind/rain, which later turned to snow. (K6AAW) . . . I've been a ham for about 10 months and this is my first try at contesting--had a ball! (WU6I) . . . Missed (most of the) first nine hours as generator wouldn't start. Ran them barefoot off the camper battery while taking breaks trying to start (it). Temps were zero to 20F in winds to 40 MPH with snow. (WA6ZBX) . . . I got back on again on Sunday afternoon hoping to get Plumas County on the map with a few more contacts and then realized that the contest was over!! K86LSP . . . The 1986 CQP was a great success, a super event. (W6HAL) . . . It was a great chance to try out my "fist" after recent hand and wrist surgery--thanks to my programmable keyer I did OK but I apologize to all the guys I sent extra "dits" to. (KY6L) . . . It was good to hear 15 open a little. Things are looking up!! (W6TKF).....SK

**Top Ten Band Breakdowns**

Out-of-State		15S	15C	20S	20C	40S	40C	75S	80C	160S	160C		
Call	Score												
N6TR/7	130,500	0	4	195	59	530	56	94	37	21	34		
KM3T	90,541	66	33	233	99	77	41	27	28	0	0		
N5JB	64,512	0	0	377	71	25	39	0	6	0	0		
KS3F	63,774	36	2	332	82	43	0	0	0	0	0		
WA5DTK	62,046	0	0	257	111	41	52	14	12	0	0		
AA4NC	61,380	27	17	290	80	18	49	1	2	0	0		
VE7SK	55,350	2	4	119	97	55	66	42	32	0	0		
WC4E	54,594	77	26	189	95	13	30	0	0	0	0		
K4LTA	53,909	28	22	176	101	71	52	22	3	0	0		
N6CQ/3	53,536	19	22	143	82	23	52	5	29	0	0		
California													
Call	Score	160S	160C	75S	80C	40S	40C	20S	20C	15S	15C	10M	VHF
W6AQ	266,452	0	0	91	58	276	156	1158	234	76	16	0	0
N6BV	262,972	0	0	57	51	379	111	1127	209	109	26	0	0
N6BT	258,738	9	23	100	74	284	117	1046	135	227	20	0	11
N16W	250,038	18	32	91	56	83	148	1038	262	117	38	3	1
W6UE	245,456	17	15	66	45	194	165	1051	207	116	16	0	0
A16V	242,846	20	22	54	51	257	106	1119	175	102	7	0	0
W7CB/6	195,634	2	18	87	47	101	86	785	214	131	22	0	0
W6REC	191,864	8	22	82	32	188	135	763	203	7	12	0	0
N6QR	171,171	0	34	0	100	0	236	0	494	0	120	17	0
NV6Z	149,292	0	0	90	33	137	13	796	128	3	0	0	0

**Special Awards**

**The Top Twenty--**  
Winners of a personalized bottle of California wine direct from the cellars of the Northern California Contest Club

California: WA6OTU, N6BV, WA6VEF, N16W, AA6RX, A16V, W7CB/6, W6REC, N6QR, NV6Z, N6ADI, NE6I, N6HC, K6RK, N6NF, K6AAW, W6UQF, W6HAL, VE2AQS/W6, and W6JTI.

Outside California: N6TR/7, KM3T, N5JB, KS3F, WA5DTK, AA4NC, VE7SK, WC4E, K4LTA, N6CQ/3, W3YY, K9ZO, K7NW, N8ET, WX4G, WA3PWL, W3HDX, WB9JK1, KA1GQW, and WA1FCN.

Chairman's Award: CA single-op with the most CW QSOs--Adam Montes, N6QR.

Secretary's Award: CA mobile single-op or team with the most QSOs--Charles "Mac" McHenry, W6BSY/M.



## Final Scores

Call, score, total QSOs, total CW QSOs (in parentheses), multiplier. An \* = new; single-op contest record; (M/S) = multi-singler (CE) = single-op CA county expedition; (MCE) = multi-op CA county expedition; /M = mobile.

## California

**Alameda**  
W6RGG 51,192 316 (316) 54  
W6HFZ 50,880 320 (320) 53  
N6EK 38,112 278 (238) 48  
K6CSL 13,068 155 (86) 33  
K6SIX 10,240 128 (0) 40  
WE6G 6,562 79 (35) 34  
K6ARE 2,484 36 (36) 23  
K6XO/M 8 2 (0) 2  
WR6R (+WE6G, K4UVT) (M/S)  
72,094 556 (131) 58

**Alpine**  
W6BSY/M 33,934 327 (68) 47  
W6TVP/6(CE)  
1,980 30 (30) 22

**Amador**  
\*N6QR 171,171 1001 (1001) 57  
N6GG 43,608 316 (316) 46  
K6BPB 19,926 162 (162) 41

**Butte**  
K6HTM 38,112 397 (0) 48

**Calaveras**  
K6RX 138,156 1007 (368) 58

**Colusa**  
KF6A (+K6SG, KV6H, N6IG,  
N6GJC, NB6G) (MCE)  
163,792 1172 (480) 58

**Contra Costa**  
\*N6BV 262,972 2069 (396) 58  
VE2AQS/W6  
119,643 1000 (99) 57  
K6ZM 29,925 234 (197) 45  
NB6L 18,020 170 (0) 53

**Del Norte**  
W6HAT 23,562 231 (0) 51

**Fresno**  
\*W6DPD 11,016 193 (0) 36  
K6XO/M 32 4 (0) 4

**Glenn**  
N6ESV(CE) 8,510 96 (38) 37

**Humboldt**  
W6JTI 103,950 711 (468) 55

**Kern**  
KA6CZS 6,240 80 (0) 19  
N6LL(CE) 4,992 96 (0) 26

**Kings**  
\*N6BT (WA6VEF op) (CE)  
258,738 2046 (369) 58

**Lake**  
KR6G 19,104 199 (0) 48

**Lassen**  
\*K6AAW(CE)  
131,254 1017 (235) 58

**Los Angeles**  
\*W6AQ (WA6OTU op)  
266,452 2065 (464) 58

W6UE (AA6RX op)  
245,456 1892 (448) 58  
N6E1 145,232 1054 (396) 58  
N6HC 140,244 1086 (246) 58  
N6IBP 23,920 202 (116) 46  
N6IC 18,306 113 (113) 54  
KG6AR 6,232 101 (0) 31  
WB6VVS 3,420 57 (57) 20  
N6LL 2 1 (0) 1

**Madera**  
KD6FW 61,264 547 (0) 56  
N6BIS(CE) 5,550 75 (0) 37  
K6XO/M 2 1 (0) 1

**Marin**  
\*K6LRN 73,590 503 (332) 55  
K6YA (N6IU, K6MA, WA6LIJ,  
WA6EAA, WA6ROM, KB6BA,  
WB6W, N6MLW, N6BC) (MCE)  
34,700 298 (98) 50

**Mariposa**  
K6XO/M 868 23 (16) 14

**Merced**  
W6EI 46,255 350 (141) 55  
K6XO/M 18 3 (0) 3  
N6ZB (+K66H) (MCE)  
136,416 1000 (352) 58

**Modoc**  
\*W6REC 191,864 1452 (404) 58

**Mono**  
WA6ZBX(CE)  
35,048 337 (0) 52

**Napa**  
W6PSJ 89,958 627 (297) 58

**Nevada**  
\*A16V 242,846 1913 (361) 58

**Orange**  
N4ARO/6 27,265 262 (141) 41  
NG7D/6 10,438 117 (73) 34  
KB6HFQ 2,000 40 (0) 25  
WB6YPX (K16X, WM6H) (M/S)  
35,722 337 (0) 53

**Placer**  
K6TMB(CE)  
66,700 575 (0) 58  
N6ESV(CE) 390 13 (0) 13

**Plumas**  
KB6LSP 3,843 77 (29) 21  
K6KWN 1,518 23 (23) 22

**Riverside**  
N6GDS 11,240 140 (1) 40

**Sacramento**  
K16O 89,148 664 (236) 57  
K6DR 62,593 508 (165) 53  
W6NKR 61,380 372 (372) 55  
K16EZ(CE)  
58,368 512 (0) 57  
N6JV 57,942 358 (1) 54  
KX6Z 14,432 111 (106) 44  
N6JM 1,729 42 (7) 19  
K8TPR 988 26 (0) 19

**San Benito**  
\*NV6Z(CE)  
149,292 1200 (174) 58  
K6XO/M 408 17 (0) 12

**San Bernardino**  
\*W6HAL 107,502 788 (310) 57  
K6EID/6 80,248 626 (181) 56  
WB6KS/M 9,272 122 (0) 38

**San Diego**  
\*N16W 250,038 1887 (537) 58  
W6UQP 124,602 849 (488) 57  
WA6UFY 40,404 360 (57) 52  
AA6EE 11,880 90 (90) 44  
K6NA 9,120 95 (95) 32

**San Francisco**  
K6ILM 23,424 191 (106) 48  
KK1A/6 9,424 146 (12) 31  
WA6AUZ 9,036 91 (69) 36

**San Joaquin**  
KAGBIM 17,672 188 (0) 47  
WB6YIY 6,600 75 (0) 44  
K6XO/M 2 1 (0) 1  
WC6H (+W7MAP, WC6I) (M/S)  
209,902 1568 (483) 58

**San Luis Obispo**  
W7CB/6 195,634 1493 (387) 58  
W6UA 49,134 350 (156) 57

**San Mateo**  
N6NF 136,938 988 (385) 58  
W6SZN 25,474 213 (116) 47  
W6OAT/6 23,908 223 (110) 43  
W6KZJ 19,680 160 (160) 41  
K6KLY 18,180 202 (0) 45  
W6SYL 15,840 160 (160) 33  
KD6XY (KA6ING op)  
1,408 32 (0) 22  
W6ISQ 1,296 27 (27) 16  
K6MO 972 27 (27) 12

**Santa Barbara**  
N6MB 100,340 865 (0) 58  
WA6FGV 97,034 769 (135) 58  
AC6T 20,460 155 (155) 44  
KY6L 15,498 132 (105) 42

**Santa Clara**  
W6XB 55,825 454 (107) 55  
AD6E 18,981 171 (171) 37  
AJ6V 15,873 190 (49) 37  
WD6EPV 15,078 121 (117) 42  
K6XO 7,944 136 (59) 24  
W6PRI 6,624 62 (60) 36  
K6KM 330 11 (11) 10

**Santa Cruz**  
NS6V 39,474 293 (188) 51  
KG6AO 11,795 154 (29) 35

**Shasta**  
WJ6Q 21,336 199 (110) 42

**Sierra**  
\*N1EE/6(CE)  
49,539 418 (175) 49  
W6TVP/6(CE)  
3,900 50 (50) 26

**Solano**  
WX6M 71,338 669 (8) 53

**Sonoma**  
W6GD 45,504 316 (316) 48  
K6BNX 43,365 295 (295) 49  
WB2CHO 156 13 (0) 6  
WB6EGE (KA6AHK, N6MQ, N6QC,  
KA6OPN, WB6WPO) (M/S)  
4,860 104 (62) 18

**Stanislaus**  
K6XO/M 40 4 (2) 4

**Sutter**  
N6ESV(CE) 390 15 (0) 13

**Tehama**  
WB6KOE 752 20 (7) 16

**Tulare**  
W6IFC 4,293 53 (53) 27  
K6XO/M 2,626 40 (21) 26

**Tuolumne**  
K6XO/M 700 17 (16) 14

**Ventura**  
N6ADI 146,044 1099 (320) 58  
W6TRF 63,965 491 (181) 55  
WA5VGI/6 34,545 245 (245) 47  
N6MA 11,970 114 (114) 35  
N6VR 7,488 83 (42) 36  
NS6X 1,937 68 (13) 13

**Yolo**  
KJEST/6 7,874 99 (56) 31

**Yuba**  
N6ESV(CE) 416 16 (0) 13  
WW6F (+K6ANP) (MCE)  
75,362 606 (326) 49

# Out-of State

Alabama				
N4JF	8,930	100	(35)	38
WA4VEK	4,290	65	(0)	33
Alaska				
*WL7K	16,400	164	(0)	50
NL7D	3,840	60	(0)	32
WL7E	2,320	40	(0)	29
Arizona				
W7YS	13,528	124	(108)	38
NN7A	11,556	107	(107)	36
AK7J	48	4	(4)	4
Colorado				
*ACOS	23,650	207	(136)	43
KJOG	17,372	150	(104)	43
NOFFZ	17,020	155	(150)	37
W2PV	14,937	152	(79)	39
KROU	14,319	151	(85)	37
W0LZV	8,931	93	(43)	39
KOGAS	6,188	91	(0)	34
Connecticut				
WALFCN	27,090	225	(152)	45
K8HVT	20,286	193	(97)	42
K1BV	9,720	103	(64)	36
W1BEM	7,968	83	(83)	32
KF1B	476	17	(0)	14
K1KI	363	12	(11)	11
Florida				
WC4E	54,594	430	(151)	54
KF4BU	11,234	137	(0)	41
WK4P	6,734	91	(0)	37
K04J	3,808	56	(0)	34
N4OKD	2,236	43	(0)	26
Georgia				
*WX4G	38,220	309	(117)	52
W8CNL	5,760	66	(28)	36
Hawaii				
*K6GSS/KH6	20,800	200	(0)	52
Idaho				
W7RH	21,844	200	(108)	43
Illinois				
K9ZO	51,728	412	(152)	53
WB9JKI	30,480	247	(141)	48
K9BG	6,848	77	(60)	32
WA9HRU	3,726	54	(30)	27
KA9FUG	2,418	39	(0)	31
KA9IMX	1,188	27	(0)	22
K9HRC	1,377	27	(27)	17
Indiana				
*N18L	26,979	224	(81)	51
KD9BG	2,408	43	(0)	28
Iowa				
KC0CP	21,744	189	(75)	48
W0JTC	1,860	31	(31)	20
Kansas				
NOFMR	18,662	160	(114)	43
NOCLV	17,100	143	(94)	45
KD0YP	3,776	59	(0)	32
WA0TKJ	2,268	42	(0)	27
Kentucky				
WA4EBN	17,544	149	(110)	43
K2UPD	17,238	153	(136)	39
Maine				
K1IHB	8,568	84	(84)	34
K1ICVM	2,080	40	(0)	26
W1APU	1,890	35	(35)	18
Maryland/DC				
*KN3T	80,541	606	(201)	57
W4KM	2,415	35	(35)	23
NN3SI (W4KM op)	1,020	23	(14)	17
Massachusetts				
*NB1B	21,798	203	(113)	42
KB1VL	10,619	102	(83)	37
K1CLN	4,031	61	(17)	29
W1FJ	2,675	39	(39)	25
W1OPJ	1,056	22	(22)	16

Michigan				
KN8P	25,488	223	(85)	48
W8SR (WA6DGX op)	9,828	100	(34)	42
K8CV	4,914	63	(63)	26
WA8OJR	3,432	52	(0)	33
K8KIR	2,925	39	(39)	25
W8WVU	1,638	26	(26)	21
W8JRK	1,472	32	(0)	23
Minnesota				
KG0B	11,742	103	(103)	38
KA7KDJ/O (M/S)	6,786	87	(0)	39
Mississippi				
W8SROI	5,920	80	(0)	37
Missouri				
W8OZSS	9,288	86	(83)	36
Montana				
N7HFU	6,480	90	(0)	36
N718G	5,425	60	(55)	31
Nebraska				
AK0G	4,640	63	(19)	32
N0GMR	3,162	51	(0)	31
WA0BOK	672	21	(0)	16
New Hampshire				
K1LBW	4,000	50	(25)	32
New Jersey				
NJ2D	13,720	142	(59)	40
W2LBT	7,378	82	(53)	34
K2PF	1,200	25	(25)	16
K2ENA	680	20	(0)	17
New Mexico				
K850Q	5,882	78	(17)	34
W5FS	825	24	(7)	15
New York				
W1KKM	13,817	133	(71)	41
W2DUN	8,019	81	(81)	33
K2ZW	5,390	77	(0)	35
W2HG	3,328	46	(36)	26
N8BJQ/M	1,440	30	(0)	24
N2F2J	1,080	20	(20)	18
North Carolina				
*AA4NC	61,380	484	(148)	55
KJ4TI	4,292	74	(0)	29
KS4S	4,234	60	(26)	29
North Dakota				
*WA3FWL	37,908	315	(99)	52
Ohio				
*N8ET	40,333	318	(125)	53
KU8E	16,492	173	(88)	38
K8MR	11,410	120	(86)	35
W8LNO	1,848	28	(28)	22
N8BJQ/M	986	29	(0)	17
KV8Q	462	14	(14)	11
Oklahoma				
KB6LO/5	13,920	145	(0)	48
Oregon				
*N6TR/7	130,500	1030	(190)	58
Pennsylvania				
*KS3P	63,774	527	(127)	54
N6CQ/3	53,536	382	(192)	56
W3HDH	30,780	258	(168)	45
W3ARK	10,218	100	(62)	39
K3TX	9,174	106	(66)	33
N3RJ	4,770	53	(53)	30
N3CZB	1,188	25	(16)	18
N8BJQ/M	690	23	(0)	15
Rhode Island				
*KA1GOW	28,764	245	(122)	47
South Carolina				
*W6ORX/4	15,540	138	(94)	42
South Dakota				
*KD0EE	12,546	137	(32)	41
Tennessee				
*K4LTA	53,909	475	(197)	47
N4TC	20,988	200	(77)	44
KB4FHE	8,151	102	(5)	39

Texas				
*N5JB	64,512	518	(116)	56
WA5DTK	62,046	487	(175)	54
K5CFA	25,080	190	(190)	44
KN5H	24,596	210	(139)	44
AG5C	18,642	168	(142)	39
W5PWG	17,082	156	(126)	39
W5ASP	11,802	105	(71)	42
W5NR	11,672	118	(107)	34
N5GOF	9,916	102	(64)	37
WN4KKK	6,420	86	(42)	30
WA5IYX	5,106	69	(0)	37
Utah				
*WB7TJ1	9,213	100	(49)	37
K6YT/7	5,460	67	(48)	30
Vermont				
WA1JVV	6,244	80	(63)	28
N1EBT	2,580	43	(0)	30
Virginia				
*W3YY	52,528	400	(138)	56
W4XD	7,875	75	(75)	35
KB4RDH	1,564	34	(0)	23
W4YE	1,200	25	(25)	16
Washington				
K7NW	43,576	352	(134)	52
KC7YE	10,044	106	(67)	36
KM7E	9,216	128	(0)	36
K7WA	7,194	77	(64)	33
West Virginia				
NR8A	4,563	61	(47)	27
W8VEN	3,654	63	(0)	29
Wisconsin				
K9JIG	3,906	63	(0)	31
Wyoming				
*K7MM	12,012	124	(60)	39
Maritime				
VE1DH	20,586	172	(94)	47
Quebec				
*VE2EDK	11,484	119	(110)	33
Ontario				
VE3KK	13,357	124	(113)	37
Alberta				
*VE6BMX	9,672	104	(104)	31
British Columbia				
*VE7SR	55,350	414	(197)	54
VE7AHA	25,850	227	(96)	47
VE7IQ	13,880	133	(81)	40
VE7BLU	768	23	(2)	16
NWT-Yukon				
*VE8CM	6,162	79	(0)	39
Asia				
JH7WQ	1,024	22	(20)	16
JH3DEJ	32	4	(0)	4
JA9YBA (JA9IIG, JA9VDA, JA9-10148 ops) (M/S)	972	25	(4)	18
Europe				
*LA8PP	5,518	63	(52)	31
EA2IA	3,240	45	(45)	24
F6BEE	1,326	26	(26)	17
EA4BVE	960	20	(20)	16
North America				
KBUNP/PJ7	80	6	(4)	5
South America				
*YV5BPG	3,762	57	(0)	33
PT2TV	936	26	(0)	18
YY1C	570	19	(0)	15

Check logs: Y35UG, N6HLP, and N6UW.